[0021] The possibility likewise exists that a gradient can be determined by means of the sensor from each of the at least two spatial components of the magnetic field, and a position signal and/or a signal strength can be calculated from the gradients, wherein the position signal and/or the signal strength can be provided as sensor signals at the output and can be transmitted to the processor.

[0022] It is readily possible that the determination of the gradients is dispensed with, and the position signal and signal strength are calculated from the spatial components of the magnetic field. However, determining the gradients of the magnetic field first offers particular advantages for calculating the position signal and the signal strength, since the gradients are especially resistant to interfering fields with regard to external influences.

[0023] The signal strength is not used here for the actual position determination, but instead is used for threshold detection. The signal strength of the gradient signal is characterized by the fact that the value decreases monotonically in a range that is relevant for threshold detection. A previously specified threshold value that is tested for positive or negative exceedance is stored in the sensor or in the processor.

[0024] Provision can be made in this regard that the processor generates the output signal, wherein a constant value is output as the output signal in the case of a signal strength less than a first stored threshold value, and otherwise the position signal is output as the output signal.

[0025] It is likewise possible that a combination of the position signal and the signal strength is used in order to generate the output signal.

[0026] Provision can be made here that the processor generates the output signal in accordance with a distinction between cases, wherein a constant value is output as the output signal in the case of a position signal greater than a second stored threshold value or in the case of a signal strength less than a third stored threshold value, and otherwise the position signal is output as the output signal.

[0027] It is readily possible that the first threshold value does not differ from the third threshold value.

[0028] Owing to the combination of position signal and signal strength, it is possible to compensate for the lack of unambiguity of the magnetic field and to map a characteristic curve over the entire measurement range. No additional costs need be incurred for additional components and/or larger magnets.

[0029] Furthermore, it is possible to specify more than one threshold for the positive or negative exceedance of the position signal and/or the signal strength in order to define additional position ranges of the output signal in which the output signal can take on predetermined values or values dependent on the position signal or on another quantity.

[0030] It is readily possible that the sensor and the processor form a single component.

[0031] Provision can be made that a method for operating a device according to the invention has at least the following steps: the processor reads in at least one sensor signal at an input and outputs an output signal at its output, and the processor generates an output signal as a function of the at least one sensor signal, wherein the output signal takes on values that are unambiguously associated with a position of the magnet relative to the sensor in the first position range,

and takes on a constant value that is independent of the position of the magnet relative to the sensor in the second position range.

[0032] In order to be able to read in the sensor signals at the input of the processor, provision can be made that a method for operating a device according to the invention additionally has the following steps: the sensor detects at least two spatial components of the magnetic field, and a gradient is determined from each of the at least two spatial components of the magnetic field by means of the sensor and is provided at the output as sensor signals.

[0033] In an additional step of the method, a position signal and/or a signal strength can be determined in the processor from the gradients of the spatial components of the magnetic field.

[0034] In this case a method can be provided in which the processor generates the output signal, wherein a constant value is output as the output signal in the case of a signal strength less than a first stored threshold value, and otherwise the position signal is output as the output signal.

[0035] It is likewise possible that a method is provided in which the processor generates the output signal in accordance with a distinction between cases, wherein a constant value is output as the output signal in the case of a position signal greater than a second stored threshold value or in the case of a signal strength less than a third stored threshold value, and otherwise the position signal is output as the output signal.

[0036] A vehicle is advantageously equipped with a device according to the invention.

[0037] Further scope of applicability of the present invention will become apparent from the detailed description given hereinafter. However, it should be understood that the detailed description and specific examples, while indicating preferred embodiments of the invention, are given by way of illustration only, since various changes, combinations, and modifications within the spirit and scope of the invention will become apparent to those skilled in the art from this detailed description.

BRIEF DESCRIPTION OF THE DRAWINGS

[0038] The present invention will become more fully understood from the detailed description given hereinbelow and the accompanying drawings which are given by way of illustration only, and thus, are not limitive of the present invention, and wherein:

[0039] FIG. 1 shows a device according to the invention;

[0040] FIG. 1a shows an output signal;

[0041] FIG. 2 shows a flowchart of a method according to the claims; and

[0042] FIGS. 3a-3d show a signal curve of the system.

DETAILED DESCRIPTION

[0043] FIG. 1 shows a device 1 according to the invention for contactlessly determining a position of a pedal 2. Such devices 1 are preferably employed in brake systems of modern vehicles.

[0044] A magnet 3 is mounted through a connecting element 16, for example a connecting rod, on the pedal 2 for which a position determination is to be carried out. In this way, it is possible to convert a motion of the pedal into a motion 15 of the magnet 3.